

CLAIMS

1. (Currently Amended) A data storage system comprising:

a storage media for storing data;  
a controller configured to:

determine an amount of available data storage free space available on the storage media;[[.]]

compare the amount of available data storage space to a plurality of threshold values, wherein each of the plurality of thresholds corresponds to an amount of available data storage space on the storage media and a method of error correction;

identify a first threshold value of the plurality of threshold values that corresponds to the determined amount of available data storage space;

and to select a method of generating additional error correction information from a plurality of methods of generating additional error correction information for data stored on the storage media based upon the first threshold value determined amount of free space on the storage media;  
generate additional error correction information based upon the selected method;  
and

store the additional error correction information.

2. – 4. (Canceled)

5. (Currently Amended) The data storage system of claim 1 [[4]] wherein if the amount of free space is greater than or equal to a first threshold value of the capacity of the storage media, the controller is configured to store a mirror copy of the data on the available data storage free space of the storage media when the amount of available data storage space is greater than or equal to the first threshold value.

6. (Original) The data storage system of claim 5 wherein the controller is configured to store the mirror copy of the data as a compressed version of the data.

7. (Currently Amended) The data storage system of claim 5 [[4]] wherein if the amount of free space is less than a first threshold value of the capacity of the storage media, the controller is configured to select a Reed/Solomon code for the method of generating additional error correction information when the amount of available data storage space is less than the first threshold value.

8. (Currently Amended) The data storage system of claim 1 wherein the storage media comprises is at least one disc divided into a plurality of sectors, and the controller stores the data on at least one of the plurality of sectors.

9. (Currently Amended) The data storage system of claim 8 wherein the controller is further configured to determine an unused amount of each of the plurality of sectors on the at least one disc, and to select the method of generating additional error correction information from one of the plurality of methods for generating additional error correction information based on the unused amount of each sector.

10. (Currently Amended) The data storage system of claim 9 wherein the controller is further configured to compress the data in a ~~on~~ the sector, and generate additional error correction information for the data in the sector, and store the additional error correction information in ~~using the additional a~~ space available due to generated by the compression of the data.

11. (Currently Amended) The data storage system of claim 9 wherein the controller is configured to write a ~~the~~ location of the error correction information for each of the sectors to a redundancy table.

12. (Currently Amended) The data storage system of claim 9 wherein the controller is configured to generate a compressed version of the data to be stored in another sector of the storage media, and generate[[s]] a Reed/Solomon error correction code for the data, and store the Reed/Solomon error correction code in the unused portion of the sector.

13. (Currently Amended) A method of storing data on a storage media comprising the steps of:

- [[1]] receiving data at a storage device containing the storage media;
- [[2]] adding error correction information eode to the received data;  
calculating an amount of available data storage space on the storage media;  
comparing the amount of available data storage space against a plurality of  
threshold values, wherein each of the plurality of thresholds corresponds  
to an amount of available data storage space on the storage media and a  
method of error correction;  
identifying a first threshold value of the plurality of threshold values that  
corresponds to the calculated amount of available data storage space;  
selecting a method of error correction from a plurality of methods of error  
correction based on the first threshold value;
- [[3]] generating additional error correction information based upon the selected method  
of error correction an amount of free space on the storage media;
- [[4]] storing the data on the storage media; and
- [[5]] storing the generated additional error correction information on the storage media.

14. ~ 15. (Canceled)

16. (Currently Amended) The method of claim 13 [[15]] further comprising: wherein if  
the amount of free space is greater than a first threshold value of media capacity, further  
performing the steps of:

when the calculated amount of available data storage space is greater than the first  
threshold value:

- [[e]] creating a mirror copy of the received data;
- [[f]] storing the mirror copy of the received data on a different location of the storage  
media; and
- [[g]] adding error correction information eode to the mirror copy of the received data.

17. (Currently Amended) The method of claim 16 [[15]] wherein if the amount of free space is less than or equal to the first threshold value and greater than a second threshold value of media capacity, further comprising performing the steps of:

when the calculated amount of available data storage space is less than or equal to the first threshold value and greater than a second threshold value of media capacity:

- [[e]] creating a mirror copy of the received data;
- [[f]] compressing a the mirror copy of the received data to create a compressed copy of the received data; and
- [[g]] storing the compressed copy of the received data on a different location of the storage media.

18. (Currently Amended) The method of claim 17 further comprising wherein prior to storing the compressed copy of the data; adding error correction information code to the compressed copy of the data.

19. (Currently Amended) The method of claim 17 [[15]] wherein if the amount of free space is less than or equal to a second threshold value of media capacity, further comprising performing the steps of:

when the calculated amount of available data storage space is less than or equal to the second threshold value of media capacity:

- [[e]] generating additional error correction information code for the received data; and
- [[f]] storing the additional error correction information code in a different location on the storage media.

20. (Currently Amended) The method of claim 19 [[15]] wherein if the amount of free space is less than or equal to a third threshold value of media capacity, further comprising performing the steps of:

when the calculated amount of available data storage space is less than or equal to a third threshold value of media capacity;

- [[e]] compressing a portion of the data on the media to increase the amount of available data storage free space on the storage media;
- [[f]] generating additional error correction information code for the received data; and
- [[g]] storing the additional error correction information code on the storage media.

21. (Currently Amended) The method of claim 20 [[15]] wherein if the amount of free space on the storage media is less than a fourth threshold, further comprising performing the steps of:

when the calculated amount of available data storage space is less than a fourth threshold value of media capacity;

- [[e]] identifying a any mirrored copy copies of data on the storage media; and
- [[f]] compressing the each identified mirrored copy of data.

22. (Currently Amended) The method of claim 21 wherein if identifying any mirrored copies of data does not identify any copies, further comprising executing the steps of:

when no mirrored copies of data are identified:

- [[(g)]] identifying a any compressed mirrored copy copies of data on the storage media;
- [[(h)]] deleting at least one of the identified compressed mirrored copy copies; and
- [[(i)]] checking if the free space on the media exceeds a fifth threshold value;
- [[(j)]] deleting at least one more identified compressed mirrored copy when the available data storage if the free space is less than the fourth does not exceed the fifth threshold value repeating stepsg-i.

23. (Currently Amended) The method of claim 22 further comprising wherein deleting at least one compressed copy based on a frequency of access of deletes the compressed data associated with compressed copy data that was least currently accessed.

24. (Currently Amended) The method of claim 22 further comprising wherein prior to step (i) generating additional error correction information code for the data associated with the deleted compressed mirrored copy.

25. (Currently Amended) The method of claim 22 wherein if step (g) fails to identify any compressed mirrored copies, further comprising performing the steps of:

when no compressed mirrored copies are identified:

[[(k)]] compressing a portion of data stored on the media; and

[[(l)]] generating additional error correction information Error Correction Code for the compressed data; and

(m) repeating steps g-h until the capacity of the media exceeds the fifth threshold.

26. (Currently Amended) The method of claim 25 further comprising wherein step (k) compressing the portion of ecompresses data based on a frequency of access of the portion of data that was least currently accessed.

27. (New) The data storage system of claim 1 wherein a first method of the plurality of methods of generating additional error correction information comprises creating a mirror copy of data on the storage medium and a second method of the plurality of methods of generating additional error correction information comprises compressing data on the data storage medium.

28. (New) The data storage system of claim 27 wherein a third method of the plurality of methods of generating error correction information comprises generating additional error correction code for data stored on the data storage medium.

29. (New) The data storage system of claim 28 wherein a fourth method of the plurality of methods of generating error correction information comprises compressing a mirrored copy of data stored on the data storage medium.

30. (New) The data storage system of claim 1 wherein the data and the additional error correction information are both stored within a single disc drive.